Amendments to the Specification:

Please amend the paragraph on page 4, lines 30-32, as follows:

Fig. 3 is a map of the *cai* gene for the CAI protein and summary of the clones used to identify and sequence this gene. The nucleotide (SEQ ID NO:11) and amino acid (SEQ ID NO:12) sequences of one of the repeated sequences found in strain G39 is shown at the bottom of the figure. The capital letters indicate the sequences D1, D2, and D3 duplicated from the cai gene, the small letters indicate the nucleotide and amino acid linkers, P=promoter, and T=terminator. The amino acid sequence NEPIYA corresponds to SEQ ID NO:25. The amino acid sequence EEPIYA corresponds to SEQ ID NO:26.

Please amend the paragraph on page 6, beginning at line 12, as follows:

The "Cytotoxin Associated Immunodominant" (CAI) antigen refers to that protein, and fragments thereof, whose amino acid sequence is described in FIG. 4 and derivatives thereof. The CAI antigen is approximately 130 kDa as determined by SDS-PAGE and comprises the following amino acid sequence (SEQ ID NO:27):

```
1   LysAsnGlyLysAsnLysAspPheSerLysValThrGlnAlaLysSerAspLeuGluAsn  20
21  SerValLysAspValIleIleAsnGlnLysValThrAspLysValAspAsnLeuAsnGln  40
41  AlaValSerValAlaLysAlaThrGlyAspPheSerArgValGluGlnAlaLeuAlaAsp  60
61  LeuLysAsnPheSerLysGluGlnLeuAlaGlnGlnAlaGlnLysAsnGluSerLeuAsn  80
81  AlaArgLysLysSerGluIleTyrGlnSerValLysAsnGlyValAsnGlyThrLeuVal 100
101 GlyAsnGlyLeuSerGlnAlaGluAlaThrThrLeuSerLysAsnPheSerAspIleLys 120
121 LysGluLeuAsnAlaLysLeuGlyAsnPheAsnAsnAsnAsnAsnAsnGlyLeuLysAsn 140
141 GluProIleTyrAlaLysValAsnLysLysLysAlaGlyGlnAlaAlaSerLeuGluGlu 160
161 ProIleTyrAlaGlnValAlaLysLysValAsnAlaLysIleAspArgLeuAsnGlnIle 180
181 AlaSerGlyLeuGlyValValGlyGlnAlaAlaGlyPheProLeuLysArgHisAspLys 200
201 ValAspAspLeuSerLysValGlyLeuSerArgAsnGlnGluLeuAlaGlnLysIleAsp 220
221 AsnLeuAsnGlnAlaValSerGlu  228
```

SEQ ID NO:27 is the expression product of the following cloned nucleotide sequence (SEQ ID NO:28, uppercase letters only) which entire fragment is cloned into an EcoRI site (EcoRI site in lowercase letters); the entire fragment is shown below as SEQ ID NO:29:

```
1   gaattcAAAAATGGCAAAAATAAGGATTTCAGCAAGGTAACGCAAGCAAAAAGCGACCTT 60
61  GAAAATTCCGTTAAAGATGTGATCATCAATCAAAAGGTAACGGATAAAGTTGATAATCTC 120
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121 AATCAAGCGGTATCAGTGGCTAAAGCAACGGGTGATTTCAGTAGGGTAGAGCAAGCGTTA 180
181 GCCGATCTCAAAAATTTCTCAAAGGAGCAATTGGCCCAACAAGCTCAAAAAAATGAAAGT 240
241 CTCAATGCTAGAAAAAAATCTGAAATATATCAATCCGTTAAGAATGGTGTGAATGGAACC 300
301 CTAGTCGGTAATGGGTTATCTCAAGCAGAAGCCACAACTCTTTCTAAAAACTTTTCGGAC 360
361 ATCAAGAAAGAGTTGAATGCAAAACTTGGAAATTTCAATAACAATAACAATAATGGACTC 420
421 AAAAACGAACCCATTTATGCTAAAGTTAATAAAAAGAAAGCAGGGCAAGCAGCTAGCCTT 480
481 GAAGAACCCATTTACGCTCAAGTTGCTAAAAAGGTAAATGCAAAAATTGACCGACTCAAT 540
541 CAAATAGCAAGTGGTTTGGGTGTTGTAGGGCAAGCAGCGGGCTTCCCTTTGAAAAGGCAT 600
601 GATAAAGTTGATGATCTCAGTAAGGTAGGGCTTTCAAGGAATCAAGAATTGGCTCAGAAA 660
661 ATTGACAATCTCAATCAAGCGGTATCAGAAGccgaattc 699
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This is an hydrophilic, surface-exposed protein having a molecular weight of approximately 120-132 kDa, preferably 128-130 kDa, produced by clinical isolates. The size of the gene and of the encoded protein varies in different strains by a mechanism that involves duplication of regions internal to the gene. The clinical isolates that do not produce the CAI antigen, do not have the *cai* gene, and are also unable to produce an active cytotoxin. The association between the presence of the *cai* gene and cytotoxicity suggests that the product of the *cai* gene is necessary for the transcription, folding, export or function of the cytotoxin. Alternatively, both the cytotoxin (CT) and the *cai* gene are absent in noncytotoxic strains. This would imply some physical linkage between the two genes. A peculiar property of the CAI antigen is the size variability, suggesting that the *cai* gene is continuously changing. The CAI antigen appears to be associated to the cell surface. This suggests that the release of the antigen in the supernatant may be due to the action of proteases present in the serum that may cleave either the antigen itself, or the complexes that hold the CAI antigen associated to the bacterial surface. Similar processing activities may release the antigen during *in vivo* growth. The absence of a typical leader peptide sequence suggests the presence of an independent export system.